Quandong Pan

(He/Him)

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“EMBRACE COMPLEXITY”

- “There is no flood in a single raindrop, no financial crash in a single dollar, and no love in a single carbon atom. Yet, when combined under certain conditions, these simple elements create phenomena far greater and more complex than their individual parts.” — The Science of Complexity

RESEARCH INTERESTS:

- I am driven to understand the **fundamental principles underlying biological processes** like pattern formation, regeneration and multicellularity etc, through employing **experimental and computational techniques**, including scRNA-seq, multi-omics integration, modeling the intricate dynamics of gene regulatory networks and the epigenetic landscape, ultimately seeking to control these systems through the combined power of **systems biology and bioengineering**.

FIELDS OF INTEREST IN GENERAL:

- Systems Biology
- Synthetic Biology & Biotechnology
- Metabolic & Genetic Engineering
- Directed Evolution and Optimization
- Evolutionary Developmental Biology
- Regeneration and Morphogenesis
- Biofilms and Multicellularity
- Self-Organization and Emergence
- Multiscale Analysis of Cellular Systems
- Network Science and Complex Systems Modeling
- Attractor Landscape Analysis of GRNs

EDUCATION

Bachelor of Science – Major: Life Sciences

University of Freiburg

Oct 2022 — Present

https://uni-freiburg.de/ucf/las/curriculum/#life-sciences

RELEVANT COURSEWORK

- Cell Biology
- Basic Chemistry and Biochemistry
- Genetics and Epigenetics
- Data Science with R
- Computational Genomics
- Human Cognition and Artificial Intelligence

WORK EXPERIENCE

RESEARCH INTERNSHIP

University Hospital Freiburg

[03/04/2024 – 30/04/2024]

The lab focuses on elucidating the epigenetic mechanisms of caste transition and reversion in Harpegnathos saltator ant:

- My role was primarily focused on conducting behavioral analysis of the Harpegnathos saltator ant colony during its transition phase induced by colony separation.
- Other duties include ant colony maintenance, participating in weekly journal club discussion etc.

RESEARCH ASSISTANT

Human Movement and Motor Rehabilitation Laboratory

International Institute of Child Study, Zhejiang Normal University

[12/10/2021 – 02/12/2022]

- The lab focuses on the behavioral correlates of neural mechanisms in the human brain.
- I was trained on operating controlled EEG experiments on adult college volunteers, supervising them during the task of character recognition, conducting interviews and gathering information.

CONFERENCES

- Horizons in Molecular Biology Symposium 2025 in Göttingen
    - [08/09/2025 – 11/09/2025] Max Planck Institute for Multidisciplinary Sciences
    - Biochemistry and Molecular Biology, Cell Biology
    - Genome Biology, Developmental Biology
    - Structural Biology, Molecular Neuroscience, Computational Biology
    - Link: https://www.mpinat.mpg.de/horizons
- Life Sciences Annual Meeting 2024 in Switzerland
    - [13/02/2024 – 15/02/2024] University of Lausanne
    - Bioinformatics, Biophysics, Cardiovascular Biology & Physiology
    - Experimental Pharmacology, Ion Channels and Membrane Transporters Microscopy
    - Molecular and Cellular Biosciences, Proteomics and Systems Biology
    - Link: **https://annual-meeting.ls2.ch/2024/program**
- SY-Stem Cell Conference 2024 in Vienna
    - [13/03/2024 – 15/03/2024] Vienna BioCenter, Austria
    - Early Embryogenesis
    - Neural lineage specification
    - Nervous Systems Development
    - Brain Disease, Regeneration and Novel Technologies
    - Link: **https://www.oeaw.ac.at/imba/seminars-events/past-events/sy-stem-2024**
- Interdisciplinary College 2024 in Germany
    - Computational Neuroscience, Linear Algebra, Machine Learning
    - Game theory, Theoretical Biology and Complex Dynamical Systems Simulation
    - Link: **https://interdisciplinary-college.org/#content** :::

SKILLS

- Programming Language :
    - R Language
    - MATLAB and Python
- Software and Platform: R Studio, MATLAB, Github, NetLogo
- Basic Skills in Molecular and Experimental Biology

LANGUAGE PROFICIENCY

- Chinese (Native)
- English
    - IELTs (Scale of 9)
        - (Overall 7.0, Listening 7.0, Reading 7.5, Speaking, 7.5, Writing 6.5)
    - PTE Academic (Scale of 90)
        - (Overall 86, Listening 80, Reading 90, Speaking, 72, Writing 90)
- German B2